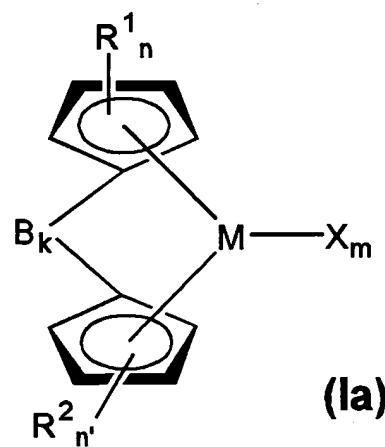


AMENDED CLAIM - OZ 0732/990001

A1

3. A process as claimed in claim 1 [or 2], wherein toluene, hexane, heptane, xylene, tetrahydrofuran (THF), dimethoxyethane (DME), toluene/THF, heptane/DME or toluene/DME is used in step d).

1. A process for purifying compounds of the formula (Ia)



where

M is a metal of transition group III, IV, V or VI of the Periodic Table of the Elements, in particular Ti, Zr or Hf, particularly preferably zirconium,

R^1 are identical or different and are each a radical SiR_3^{12} , where R^{12} are identical or different and are each a hydrogen atom or a C_1-C_{40} group, preferably C_1-C_{20} -alkyl, C_1-C_{10} -fluoroalkyl, C_1-C_{10} -alkoxy, C_6-C_{20} -aryl, C_6-C_{10} -fluoroaryl, C_6-C_{10} -aryloxy, C_2-C_{10} -alkenyl, C_7-C_{40} -arylalkyl, C_7-C_{40} -alkylaryl or C_8-C_{40} -arylalkenyl, or R^1 is a C_1-C_{30} group, preferably C_1-C_{25} -alkyl such as methyl, ethyl, tert-butyl, cyclohexyl or octyl, C_2-C_{25} -alkenyl, C_3-C_{15} -alkylalkenyl, C_6-C_{24} -aryl, C_5-C_{24} -heteroaryl, C_7-C_{30} -arylalkyl, C_7-C_{30} -alkylaryl, fluorinated C_1-C_{25} -alkyl,

fluorinated C₆-C₂₄-aryl, fluorinated C₇-C₃₀-arylalkyl, fluorinated C₇-C₃₀-alkylaryl or C₁-C₁₂-alkoxy,

or two or more radicals R¹ may be joined to one another in such a way that the radicals R¹ and the atoms of the cyclopentadienyl ring which connect them form a C₄-C₂₄-ring system which may in turn be substituted,

R² are identical or different and are each a radical SiR₃12, where R¹² are identical or different and are each a hydrogen atom or a C₁-C₄₀ group, preferably C₁-C₂₀-alkyl, C₁-C₁₀-fluoroalkyl, C₁-C₁₀-alkoxy, C₆-C₁₄-aryl, C₆-C₁₀-fluoroaryl, C₆-C₁₀-aryloxy, C₂-C₁₀-alkenyl, C₇-C₄₀-arylalkyl, C₇-C₄₀-alkylaryl or C₈-C₄₀-arylalkenyl, or R² is a C₁-C₃₀ group, preferably C₁-C₂₅-alkyl such as methyl, ethyl, tert-butyl, cyclohexyl or octyl, C₂-C₂₅-alkenyl, C₃-C₁₅-alkylalkenyl, C₆-C₂₄-aryl, C₅-C₂₄-heteroaryl, C₇-C₃₀-arylalkyl, C₇-C₃₀-alkylaryl, fluorinated C₁-C₂₅-alkyl, fluorinated C₆-C₂₄-aryl, fluorinated C₇-C₃₀-arylalkyl, fluorinated C₇-C₃₀-alkylaryl or C₁-C₁₂-alkoxy, or two or more radicals R² may be joined to one another in such a way that the radicals R² and the atoms of the cyclopentadienyl ring which connect them form a C₄-C₂₄ ring system which may in turn be substituted,

X is a halogen atom, in particular chlorine,

n is from 1 to 5 when k = 0, and n is from 0 to 4 when k = 1,

n' is from 1 to 5 when k = 0, and n' is from 0 to 4 when k = 1,

m is from 1 to 4, preferably 2,

k is zero or 1, where the metallocene is unbridged when k = 0 and is bridged when k = 1, with preference being given to k = 1, and

B is a bridging structural element between the two cyclopentadienyl rings,

comprising the steps:

a) reacting the compound of the formula (Ia) with a ligand exchange component

M^1YR^3

where

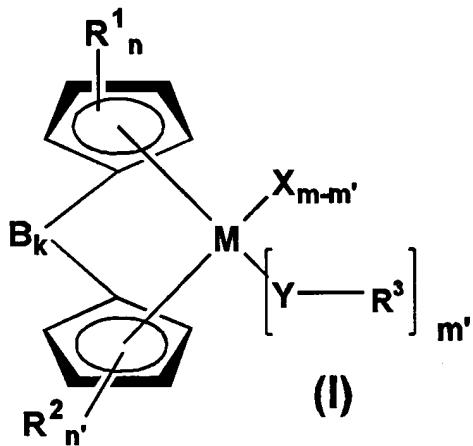
M^1 is a cation or a cationic fragment, in particular Li, Na, K, MgCl, MgBr, MgI, or is an ammonium cation corresponding to an amine,

R^3 is hydrogen or a C_1 - C_{40} group, preferably C_1 - C_{25} -alkyl such as methyl, ethyl, tert-butyl, cyclohexyl or octyl, C_2 - C_{25} -alkenyl, C_3 - C_{15} -alkylalkenyl, C_6 - C_{24} -aryl, C_5 - C_{24} -heteroaryl such as pyridyl, furyl or quinolyl, C_7 - C_{30} -arylalkyl, C_7 - C_{30} -alkylaryl, fluorinated C_1 - C_{25} -alkyl, fluorinated C_6 - C_{24} -aryl, fluorinated C_7 - C_{30} -arylalkyl or fluorinated C_7 - C_{30} -alkylaryl,

Y is an element of main group 6 of the Periodic Table of the Elements, in particular oxygen or sulfur, or a fragment CR^3_2 , NR^3 , $NR^3(CO)$ -, $NR^3(SO_2)$ -,

PR^3 or $P(=O)R^3$, $O(CO)-$, $O(SO_2)-$,

to form the compound of the formula (I)



where

M , R^1 , R^2 , R^3 , X , Y , n , n' , m , k , B and R^{12} are as defined above and
 m' is from 1 to 4, preferably 1 or 2,
with the compound of the formula M^1X , where M^1 and X are as defined
above, being eliminated, in an inert solvent or solvent mixture,

- b) if desired, separating off solid residues of the formula M^1X
- c) if desired, separating off the inert solvent or solvent mixture,
- d) recrystallizing the compound of the formula (I) from an aprotic hydrocarbon,
- e) separating the compound of the formula (I) from the mother liquor.

2. A process as claimed in claim 1, wherein a polar or nonpolar, aprotic hydrocarbon

or hydrocarbon mixture is used in step d).

3. A process as claimed in claim 1, wherein toluene, hexane, heptane, xylene, tetrahydrofuran (THF), dimethoxyethane (DME), toluene/THF, heptane/DME or toluene/DME is used in step d).
4. The use of a compound obtained as set forth in claim 1 for preparing a catalyst system for the polymerization of olefins.
5. A catalyst system comprising at least one compound obtained as set forth in claim 1 and a support and, if desired, a cocatalyst.
6. A process for preparing a polyolefin in the presence of a catalyst system as claimed in claim 5.
7. The use of a catalyst as claimed in claim 5 for the polymerization of one or more olefins.